

Amendments to the Claims

This listing of claims will replace the originally filed claims in the application.

Listing of Claims:

Claims 1 – 11 (canceled).

Claim 12 (new): A method which may be used for injecting carbon dioxide into a pressurized gaseous stream, said method comprising:

- a) converting liquid carbon dioxide into two-phase “gas + solid” carbon dioxide, wherein said liquid carbon dioxide is converted with a direct expansion means;
- b) injecting a second gas into said two-phase carbon dioxide; and
- c) injecting the mixture of said two-phase carbon dioxide and said second gas into a pressurized gas stream with an injector means, wherein said injector means is connected to the chamber containing said stream.

Claim 13 (new): The method of claim 12, further comprising injecting said two-phase carbon dioxide into about the center of said stream, wherein:

- a) at least part of said two-phase carbon dioxide is distributed substantially in the direction of stream flow; and
- b) at least part of said two-phase carbon dioxide is distributed in a direction substantially against said flow.

Claim 14 (new): The method of claim 12, wherein said second gas comprises gaseous carbon dioxide withdrawn from upstream of said expansion means.

Claim 15 (new): The method of claim 12, further comprising adjusting the amount of said mixture injected into said stream based upon a measured parameter of said stream, wherein:

- a) said parameter is measured at a location substantially downstream of said injector; and
- b) said parameter comprises at least one member selected from the group consisting of:
 - 1) a physical characteristic of said stream; and
 - 2) a chemical characteristic of said stream.

Claim 16 (new): An apparatus which may be used for enriching a gas stream with carbon dioxide, said apparatus comprising:

- a) a variable flow expansion valve;
- b) an injector means connected to a chamber, wherein said chamber contains a gas stream;
- c) a T-piece, wherein said T-piece is connected to both the outlet of said valve, and to said injector means;
- d) a means for supplying said valve with liquid carbon dioxide; and
- e) a means for feeding said T-piece with an inerting gas.

Claim 17 (new): The apparatus of claim 16, wherein said injector further comprises:

- a) a deflector located at an end of said injector, wherein said deflector comprises two slopes for distributing two-phase carbon dioxide into said gas stream, wherein:
 - 1) at least part of said carbon dioxide is distributed substantially in the direction of stream flow; and
 - 2) at least part of said carbon dioxide is distributed in a direction substantially against said flow; and
- b) at least two openings for said carbon dioxide, wherein said openings are positioned to distribute said carbon dioxide along the axis of transfer of said stream.

Claim 18 (new): The apparatus of claim 16, wherein the length of said injector located within said chamber is equal to about half the width of said chamber.

Claim 19 (new): The apparatus of claim 16, wherein said injector is made of a thermally insulated material.

Claim 20 (new): The apparatus of claim 19, wherein said thermally insulated material is polysulfone.

Claim 21 (new): The apparatus of claim 16, wherein said slopes form an angle of about 80° with respect to each other.

Claim 22 (new): The apparatus of claim 16, further comprising a vaporization means for drawing off and vaporizing at least part of said liquid carbon dioxide, wherein:

- a) said vaporization means is located upstream of said expansion valve; and